Tight fitting, supplied-air respirators are categorized according to the mode of operation by which breathing air is supplied to the facepiece. A supplied-air respirator operating in a continuous flow mode has a constant flow of breathing air forced into the facepiece. In the demand mode, air is supplied to the facepiece when the user inhales, whereas a respirator operating in a pressure demand mode always maintains a static positive pressure in the facepiece and provides additional air to the wearer when he or she inhales.

Although atmosphere-supplying respirators do not rely on ambient air for respiratory protection, they are not all suitable—or approved—for use in an IDLH atmosphere. Obviously, those equipped with loose-fitting facepieces cannot be used in such an environment. However, among SARs equipped with tight-fitting facepieces, only those that operate in a pressure-demand mode and are equipped with a self-contained air supply, either as a primary or auxiliary air source, can be used. An airline respirator that does not have auxiliary self-contained air can only be used under non-IDLH conditions.

Another type of supplied-air respirator is the self-contained breathing apparatus (SCBA) in which the user carries the air supply, which is an air cylinder. Unlike other supplied-air respirators, a SCBA has the advantage of unlimited mobility for the user because there is no air hose of a fixed length to limit how far the user can travel. A major disadvantage of the SCBA is the fact that the air supply has a limited duration and may, therefore, have to be refilled or replaced before the user has completed the task.

Examples of supplied-air respirators for non-IDLH and IDLH environments are shown in Figure 5.

Figure 5

Supplied-Air Respirators (SAR)
(Photos courtesy of OSHA)

This unit is attached directly to the air source and is approved for use only in non-IDLH atmospheres.

Combination full face, pressure-demand supplied-air respirator with an auxiliary SCBA air supply. This unit can be used in IDLH atmospheres.